

Claims

1. A light string comprising:

a predetermined number of light emitting diodes electrically coupled in series to form at least one series block, each diode having an average alternating current drive voltage, the series block having a first diode and a last diode, the first diode directly coupled intermediate a source end and a terminal end of a first of a pair of wires and the last diode directly coupled intermediate the source end and terminal end of a second of the pair of wires, the light string being free from additional circuitry intermediate the first diode and the source end of the first pair of wires, between each of the diodes, and intermediate the last diode and the source end of the second pair of wires, and

a first connector coupled to both the source end of the first of the pair of wires and the source end of the second of the pair of wires which connector facilitates a direct connection between the first diode and a first side of an alternating current electrical power supply, and the last diode and a second side of the alternating current electrical power supply, the supply having a supply voltage, the predetermined number of diodes substantially calculated by dividing the supply voltage by the average alternating current drive voltage.

2. The light string of claim 1 in which the light string is adapted to accept alternating current electricity without an intervening conversion to direct current electricity.

3. The light string of claim 2 further comprising a second pair of wires supporting the LEDs.

4. The light string of claim 1 in which the electrical power supply provides
5 alternating current having an alternating current voltage of at least about 110 volts.

5. The light string of claim 4 in which each LED has a p-n junction defining
a break down voltage above which voltage applied in reverse bias said p-n junction
breaks down, and in which light string the alternating current voltage is less than the
10 break down voltage.

6. The light string of claim 5 in which the alternating current voltage is in the
range of about 110-220 volts.

7. The light string of claim 1 in which the alternating current has a frequency
15 effective to cause each LED to emit pulsed light which the human eye perceives as
continuous.

8. The light string of claim 7 in which the frequency is at least about 50 Hz.
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9. The light string of claim 1 in which the first connector is polarized, and
which light string further comprises a second polarized connector electrically connected
to the terminal end of the first of the pair of wires and the terminal end of the second of

the pair of wires, said second polarized connector being adapted to couple with a first polarized connector of another light string, thereby providing for coupling of multiple light strings in an end-to-end arrangement.

5 10. The light string of claim 1 in which the number of LEDs of each series block is at most a maximum number determined by the electrical power supply.

11. The light string of claim 1 in which each LED has a corresponding light output color and all of the LEDs in each series block is either of the same color or of
10 different colors.

12. The light string of claim 11 in which the LEDs in each series block are arranged by color either in a non-random order or a pseudo-random order.

15 13. The light string of claim 11 in which at least one LED comprises a housing and a fiber-optic bundle removably mounted to the housing operative to diffuse light output of the LED through the fiber-optic bundle.

14. The light string of claim 1 in which the LEDs are offset from the wires and
20 arranged relative to a wire axis.

15. The light string of claim 14 in which each LED is arranged parallel to the wires to create a straight arrangement.

16. The light string of claim 15 in which the LEDs in each series block are uniformly spaced apart.

5 17. The light string of claim 14 in which the LEDs are arranged in offset groupings, each offset grouping having a length relative to the LEDs therein, and are arranged perpendicular to the wires to create a light string having a curtain arrangement, wherein the light string is comprised of offset groupings which are spaced either uniformly or nonuniformly in either a periodic or pseudo-random arrangement.

10 18. The light string of claim 17, wherein the LEDs are uniformly spaced by a first distance within an offset grouping and each offset grouping is uniformly spaced by a second distance along the drive wire axis.

15 19. The light string of claim 1, further comprising a lamp holder having a keyed offset, the lamp holder fixedly attached to each LED, and a lamp base having a notch adapted to receive the keyed offset of the lamp holder, thereby mechanically orienting and aligning each LED by its polarity.

20 20. The light string of claim 19, wherein the lamp base further comprises a base keyed offset and a lamp assembly holder, the lamp assembly holder having a notch adapted to receive the base keyed offset.